REMARKS

Claims 1-29 were pending in this application. By this Amendment, claim 3 has been canceled, without prejudice or disclaimer, and claims 1, 13, 20 and 27 have been amended to include the features formerly recited in now-canceled claim 3 (as originally filed). Accordingly, claims 1, 2 and 4-29 are now pending in this application, with claims 1, 13, 20 and 27 being in independent form.

Claims 1-2 and 5-27 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over U.S. Patent No. 6,580,684 to Miyake in view of in view of U.S. Patent No. 5,835,642 to Mimnagh. Claims 3, 4, 28 and 29 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Miyake in view of Mimnagh and further in view of U.S. Patent No. 5,740,149 to Iwasaki et al.

Applicant has carefully considered the Office Action and the cited art, and respectfully submits that independent claims 1, 13, 20 and 27, as amended, are patentable over the cited art, for at least the following reasons.

Miyake, as understood by Applicant, proposes an optical disc recording approach wherein physical characteristics information, such as information concerning the material, the disc type, the track pitch, the moment of inertia, and the size/configuration of the recording medium, is recorded as subcode on the recording medium. The physical characteristics information can also include information regarding the recommended linear velocity for recording information on the recording medium.

Mimnagh, as understood by Applicant, proposes an optical disc recording approach for a Compact Disc (CD) Write Once or a CD erasable, wherein in order to obtain patterns on the tracks which have constant dimensions irrespective of the velocity at which they are recorded, velocity-

related information indicative of the recording process is provided on the optical disc, and is utilized to adjust the recording process to the recording velocity that must actually be used.

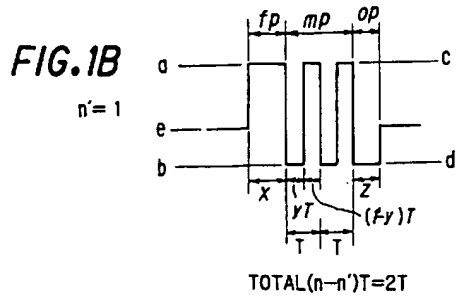
However, Miyake and Mimnagh, as acknowledged in the Office Action, does not teach or suggest that one of the multipulse patterns (for which conditional information is pre-formatted on the optical information recording medium) is a 1T cycle pattern including a part where the combination of the heating pulse and the cooling pulse is set as a 1T cycle, and another one of the multipulse patterns is a 2T cycle pattern including a part where the combination of the heating pulse and the cooling pulse is set as a 2T cycle, as provided by the subject matter of amended claim 1 of the present application.

Iwasaki, as understood by Applicant, proposes an approach utilizing pulse-width modulation (PWM) to record to a phase-change type optical recording medium.

Iwasaki, Fig. 1 and col. 3 lines 63-67 thru col. 4 lines 1-19, were cited in the Office Action.

Iwasaki, Fig. 1 merely shows a 1T cycle pattern in which a pattern is constructed by a front-pulse part (fp), a multipulse part (mp) and an end-pulse part (op). Iwasaki, Fig. 1B (reproduced below) shows an example of the 1T cycle pattern with the multipulse part having "total (n-n')T=2T", and, contrary to the contention in the Office Action, does not show an example of a 2T cycle pattern.

FIG. 1B



Iwasaki, col. 3 line 63 through col. 4 line 19, states as follows:

> In other words, in the data recording/regenerating method in which, by irradiating an electro-magnetic wave to a data recording medium to generate a phase change in a recording layer thereof, data is recorded in and regenerated from said data recording medium, and also in which rewriting of data is possible; when recording data in said data recording medium by modulating signals according to the PWM recording system, pulse modulation for recording when recording or rewriting a 0 signal having a signal width of nT (T: Clock time) after modulation is a continuous electromagnetic wave at a power level e; a record signal pulse array when recording or rewriting 1 signal having a signal width of nT after modulation is an electromagnetic wave pulse array comprising a pulse section fp having a time width x and a power level a, a multi-pulse section mp in which lower level pulses at a power level b having a time width of T in total and high power level pulses at a power level c alternately appear at a duty ratio of y (n-n') times in total, and a pulse section op having a time width z and a power level d,; x, y, and z satisfy the relations of $0.5T \leq x \leq 2T$, $0.4 \leq y \leq 0.6$, and $0.5T \leq z \leq 1$ T; n' is an integer equal to or smaller than n ($n' \leq n$); and also controls are provided so that the relation of (a and c)>e>(b and d) is satisfied.

While Iwasaki proposes recording or rewriting a 0 signal having a signal width of nT after modulation and recording or rewriting a 1 signal having a signal width of nT after modulation, there is simply no description of a 2T cycle pattern in Iwasaki et al.

In contrast, in the subject matter of amended claim 1 of the present application, one of the multipulse patterns is the 1T cycle pattern which includes a part where the combination of a heating pulse and a cooling pulse is set to a 1T cycle, and another one of the multipulse patterns is the 2T cycle pattern which includes a part where the combination of a heating pulse and a cooling pulse is set to a 2T cycle. An example of a 2T cycle pattern is shown in Fig. 3 and 4 of the present application and discussed at pages 34-35 of the application.

In the 1T cycle pattern, the pattern is constructed by the front-pulse part at the power level for heating pulses with duration xT, the multipulse part having total (n-n') high-level pulses at the power level for heating pulse each with duration yT, and low-level pulses at the power level

for cooling pulses each with duration (1-y') T between the high-level pulses, and the end-pulse part at the power level for cooling pulse with duration 2T (see application, page 33, line 13 through page 34 line 5, and Figs. 1 Fig. 2).

In the 2T cycle pattern, different patterns are used in combination corresponding to each of the time when "n" is an odd number and the time when "n" is an even number. When "n" is an even number, the pattern has the following construction: the front pulse part at the power level for heating pulse with duration x'T; the multipulse part having total ((n/2)-1) high-level pulses at the power level for heating pulse each with duration y'T and a low-level pulse at the power level for cooling pulse with duration (2-y') T between the high-level pulses; and the end pulse part at the power level for cooling pulse with duration z'T. When "n" is the odd number, the multipulse part having total (((n-1)/2)-1 high-level pulses for heating pulse each with duration y'T and the low-level pulse for cooling pulse each with duration (2-y')T between the high-level pulses (see application, page 34 line 6 through page 35 line 2, and Figs. 3 and 4).

The 2T cycle pattern having such a multipulse pattern is adapted to high-speed recording and addresses a problem that when linear velocity of recording using the multipulse pattern with a laser beam increases, a basic clock frequency becomes high and on/off time of a laser beam source cannot follow the speed.

Iwasaki simply does not teach or suggest such a 2T cycle pattern.

Thus, the combination of Iwasaki, Miyake and Mimnagh fails to teach or suggest that one of the multipulse patterns (for which conditional information is pre-formatted on the optical information recording medium) is a 1T cycle pattern including a part where the combination of the heating pulse and the cooling pulse is set as a 1T cycle, and another one of the multipulse patterns is

a 2T cycle pattern including a part where the combination of the heating pulse and the cooling pulse is set as a 2T cycle, as provided by the subject matter of amended claim 1 of the present application.

Independent claims 13, 20 and 27 are patentably distinct from the cited art for at least similar reasons.

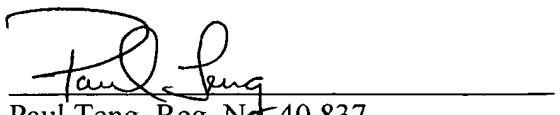
Accordingly, for at least the above-stated reasons, Applicant respectfully submits that independent claims 1, 13, 20 and 27, and the claims depending therefrom, are patentable over the cited art.

In view of the amendments to the claims and remarks hereinabove, Applicant submits that the application is now in condition for allowance. Accordingly, Applicant earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Office is hereby authorized to charge any fees that may be required in connection with this response and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,



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